NC STATE UNIVERSITY Center for Human Health and the Environment

**GenX Exposure Study**
North Carolina State University
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https://chhe.research.ncsu.edu/coec/projects/genx/the-genx-exposure-study/

[INSERT DATE]

[INSERT STREET ADDRESS]
[INSERT CITY, STATE, ZIP]

Dear [INSERT PARTICIPANT NAME],

Thank you for participating in the GenX Exposure Study. The purpose of this research study is to see if GenX and related per- and polyfluoroalkyl substances (PFAS) are present in the bodies of New Hanover County residents. PFAS chemicals are a family of fluorochemicals; some of these chemicals, like GenX, are used to make non-stick products.

As part of the study, we developed methods to measure GenX and other PFAS chemicals in human blood samples. These tests were done as part of the research project. This report describes the results from the blood tests. We are sharing your PFAS blood results with you on Page 5. Results from all blood samples collected in November 2017 and May 2018 are included.

## What did we do?

- Enrolled 310 participants in November 2017 and 35 in May 2018.
- Collected blood samples in November 2017 and May 2018.
    - 44 participants provided blood samples in both November and May. These samples let us see how long these chemicals stay in the blood.
- Tested for 23 different PFAS, including GenX, in the blood samples.
    - These chemicals were selected based on what we know about Teflon manufacturing processes and chemicals commonly found in US residents.
    - These testing took place at the US Environmental Protection Agency (USEPA).
    - The full list of the PFAS tested in blood are on the GenX Exposure Study website (tinyurl.com/GenXstudy).

## What did we find?

- We did *not* find GenX in the blood samples at levels greater than 2 ng/mL.
    - This was one of our key research questions. We used laboratory methods to detect GenX if it was present in blood. We had the ability to detect 2 ng/mL (2 parts per billion) GenX or greater.
    - One of the big unknowns about GenX and the newer PFAS chemicals is how long they stay in the body. Because we could not detect GenX in blood samples, we know that GenX does not stay in the blood for very long.
- A number of PFAS chemicals, both newly identified and historically used chemicals, were found in the blood of New Hanover County residents.
- Newly identified PFAS chemicals called Nafion by-product 2, PFO4DA, PFO5DoDA, and Hydro-EVE were found in most blood samples.
- The blood levels of newly identified PFAS chemicals appear to have dropped from Nov 2017 to May 2018 among the 44 participants who provided two blood samples. (Figure 1)
- The historically used, or "legacy", chemicals called PFOA, PFOS, PFHxS, PFNA, and PFDA were found in most blood samples.
- The levels of historically used chemicals in the blood of New Hanover County residents are higher than national estimates. (Figure 2)
    - Every year, the CDC conducts a survey called NHANES (the National Health and Nutrition Examination Survey). NHANES collects blood samples and medical information from people from across the country. Blood samples are analyzed for the historically used PFAS chemicals.
    - We used the NHANES results for PFAS chemicals in 2013-2014 as a comparison for these results from the GenX Exposure Study.

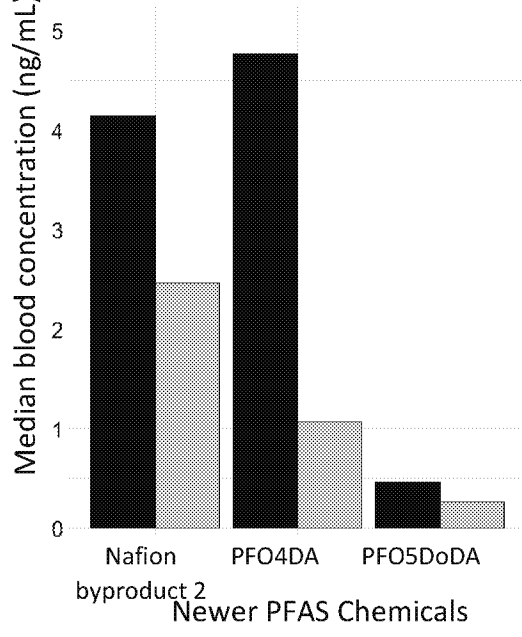


**Figure 1.** Changes in blood PFAS levels from November 2017 to May 2018. Median concentration (ng/mL) of newly identified PFAS among 44 participants who provided blood samples in Nov 2017 (black bar) and May 2018 (gray bar).

## What are the limitations of the PFAS blood sampling results?

- These results tell you how much PFAS was present in your blood on the day you provided a sample.
    - We don't know how levels will vary over time.
    - We don't know how you were exposed or how long the exposure lasted. Some of these chemicals have many sources, so we don't know what exposure resulted in the presence of these chemicals.

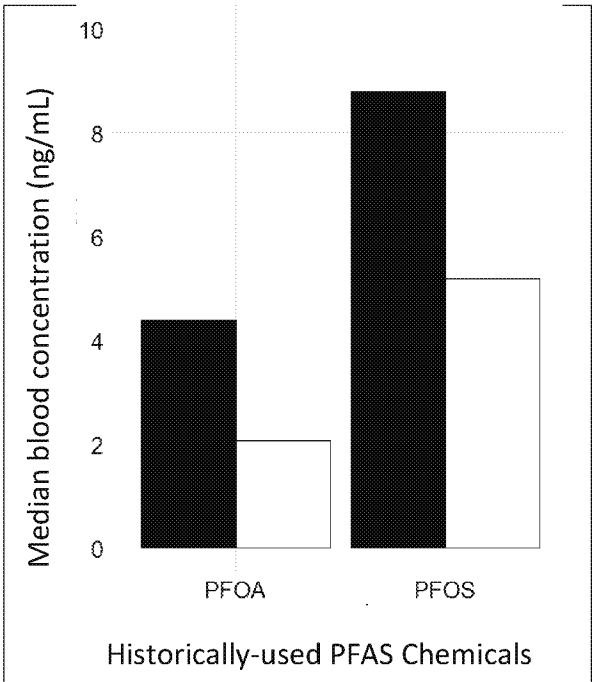


**Figure 2.** Median blood concentration (ng/mL) of legacy PFAS among 388 samples from 344 GenX Exposure Study participants (black bar). NHANES 2013-14 data (white bar) shown for comparison.

- Chemicals which are not present in blood may still be present in the body. GenX and other PFAS will also be analyzed from the urine samples you provided. We are looking for GenX and other PFAS chemicals in the urine samples that you provided.
- The results for the Hydro-EVE are considered semi-quantitative. We are confident that Hydro-EVE is present in blood. We do not know the exact amount because the tools needed to calculate this were not available at the time of analysis.
- This is a research study not a clinical test.
    - The chemicals that we are reporting required new and sophisticated methods for detection.

## What do these results mean to your health?

- For some of the chemicals we measured (Nafion byproduct 2, PFO4DA, PFO5DoDA, Hydro-EVE), there are no toxicology data available to inform about potential human health effects. Therefore, we cannot say what these results mean for your health.
    - Our findings will help inform future toxicology studies.

- While scientific research on PFAS is growing, for now these PFAS blood results **cannot** tell you:
  - If a current health problem is related to the PFAS levels found in your body.
  - If the PFAS levels in your body will have negative health effects now or later in life.

**Where the study is heading**

- We are working to analyze the urine samples collected in the study for PFAS. We will send you those results when they are available.

- Water results for May participants will be shared later this year.

**Your PFAS blood results**

Your individual PFAS blood sample results are presented on Page 5. If you provided blood samples in Nov 2017 and May 2018, both results are shown on Page 5.

If you have questions about how to read this report, please go to XYZ for a video that will walk you through it. There is also more information on our website about these findings.

We plan to host community meetings in Wilmington to discuss these results. The meetings will be held XXX, YYY, ZZZ [date, time, location]. The ZZZ meeting will be held in Spanish.

If you have additional questions related to the GenX Exposure Study or how we collected and processed the samples, please feel free to contact our study office by phone (855-854-2641) or email (genx-exposurestudy@ncsu.edu).

We thank you for your participation in the GenX Exposure Study. Your results, when combined with others, may help us better understand any potential health risks from PFAS exposure in the future.

Sincerely,

[insert signature]

Jane Hoppin, ScD

GenX Exposure Study, Principal Investigator